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The Resources Agency
DEPARTMENT OF FISH AND GAME

STANDING STOCKS OF FISHES IN SECTIONS OF LITTLE LAST CHANCE CREEK, PLUMAS COUNTY, 1993

by

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INTRODUCTION

The Department of Water Resources (DWR) initiated an instream flow program in 1976 to identify streams that would benefit from flow enhancement and to assess instream values. The Northern District of the DWR selected Little Last Chance Creek below Frenchman Reservoir (Figure 1) as one of the streams to study under this program.

Department of Fish and Game (DFG) biologists studied trout populations in Little Last Chance Creek in 1976, 1981, 1986, 1991, and 1992. Brown trout (Salmo trutta) was the only game fish caught each year. Sacramento suckers (Catostomus occidentalis) were also caught each year (Brown 1976, Bumpass et al. 1989, Brown 1991, Brown 1992, Brown 1993).

This report documents the results of sampling conducted in 1993. The purpose of this study is to evaluate the effects of the operation of Frenchman Reservoir on populations of trout in Little Last Chance Creek through the periodic sampling of fish at established stations in that creek.

Results of this report and previous reports on Little Last Chance Creek will be discussed in a summary report that will evaluate current operation of Frenchman Reservoir and make recommendations regarding its future operations.

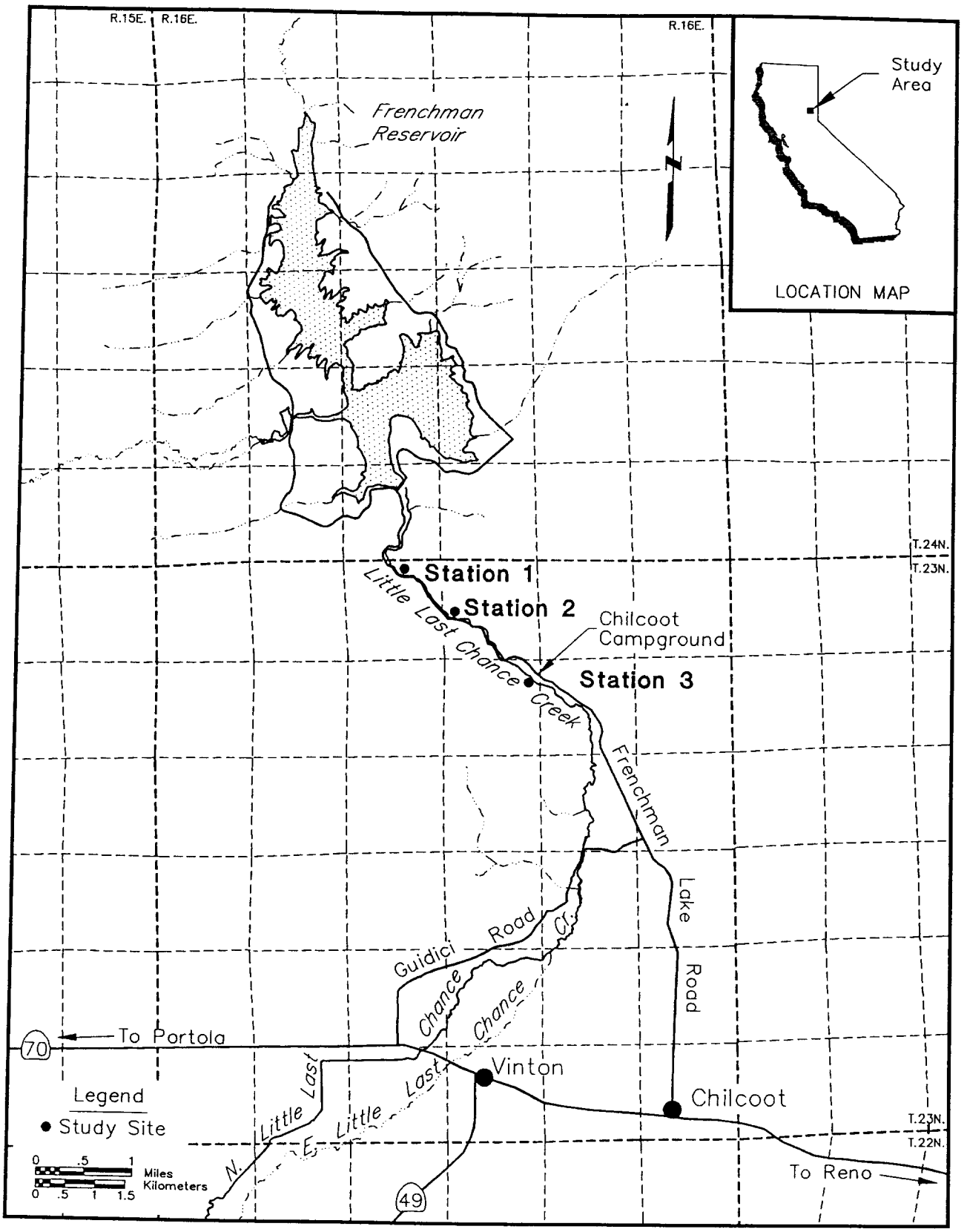

Figure 1. Stations Sampled to Estimate Standing Stocks of Fish in Little Last Chance Creek, Plumas County, 1993.

METHODS

Standing stocks of fishes were estimated at two stations in Little Last Chance Creek in Plumas County in September, 1993. Stations were intentionally selected to be near stations sampled in previous DFG studies (Appendix 1). Markers had previously been placed in trees along the stream to identify station boundaries. Stations varied in length from 46.5 to 60 m. The length, average width, and average depth of each station was measured. Fish were captured with a battery-powered backpack electroshocker in stream sections blocked by seines. Captured fish were removed from the net-enclosed section on each pass. Standing stock estimates were developed using the two-count method of Seber and LeCren (1967) or the multiple-pass method of Leslie and Davis (1939) with limits of confidence computed using a formula proposed by DeLury (1951).

The weight of each trout was determined by displacement. Fork length (FL) of each fish was measured to the nearest millimeter. Scale samples were not taken.

Distribution of fish caught is listed according to location. Standing crops of brown trout were calculated for individual stations where each fish was caught.

RESULTS AND DISCUSSION

Brown trout were caught at stations 1 and 3. Brown trout ranged in size from 95 to 288 mm (Figure 2). Brown trout biomass averaged 1.7 g/m^2 at two stations. Biomass of brown trout large enough for fishermen to catch and keep (≥127 mm FL) averaged 1.25 g/m^2 (Table 1 and Appendix 2).

TABLE 1. Estimate of Brown Trout Standing Crop in Little Last Chance Creek, Plumas County, 1993.

Distance Below Frenchman Dam (km)	Population Estimate	95% Confidence Interval	Estimate of Biomass (g/m^2)	Catchable Trout (≥ 127 mm FL)	Biomass of Catchable Trout (g/m^2)
1.6	12	12-14	1.5	4	1.4
4.4	21	20-25	1.9	13	1.1

The relationship between length (L) and weight (W) of brown trout is:

$\text{Log}_{10} W = -4.9 + 3.0 \text{Log}_{10} L$
$r^2 = 0.98$
N = 36 (Figure 3 and Appendix 2)

The average condition factor of 36 brown trout was 1.1238.

Brown trout population estimates in previous years averaged between <1 and 21 while biomass averaged between 0.3 and 5.5 g/m^2. Rainbow trout population estimates ranged

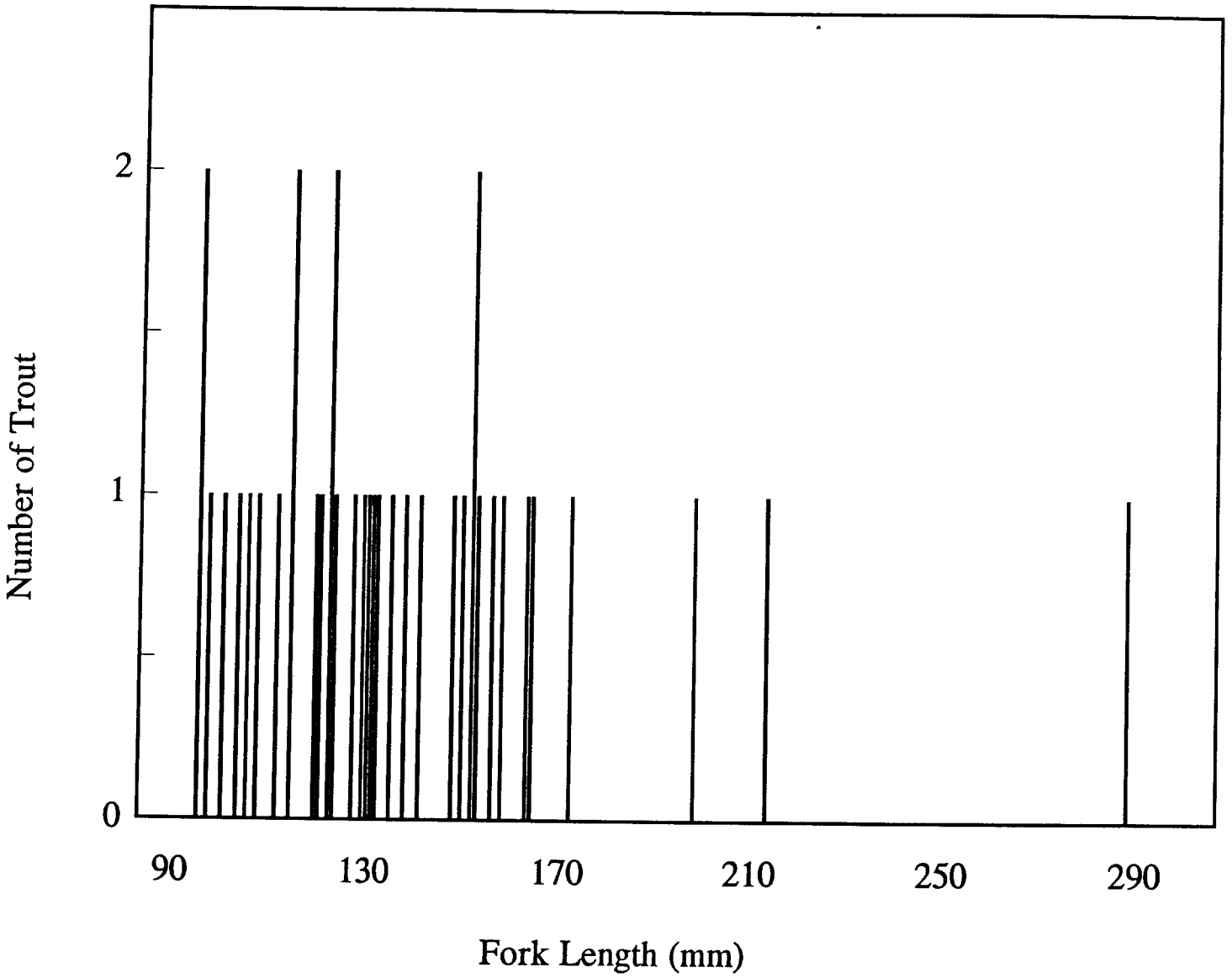

FIGURE 2. Length and observed frequency of brown trout caught in Little Last Chance Creek, Plumas County, 1993.

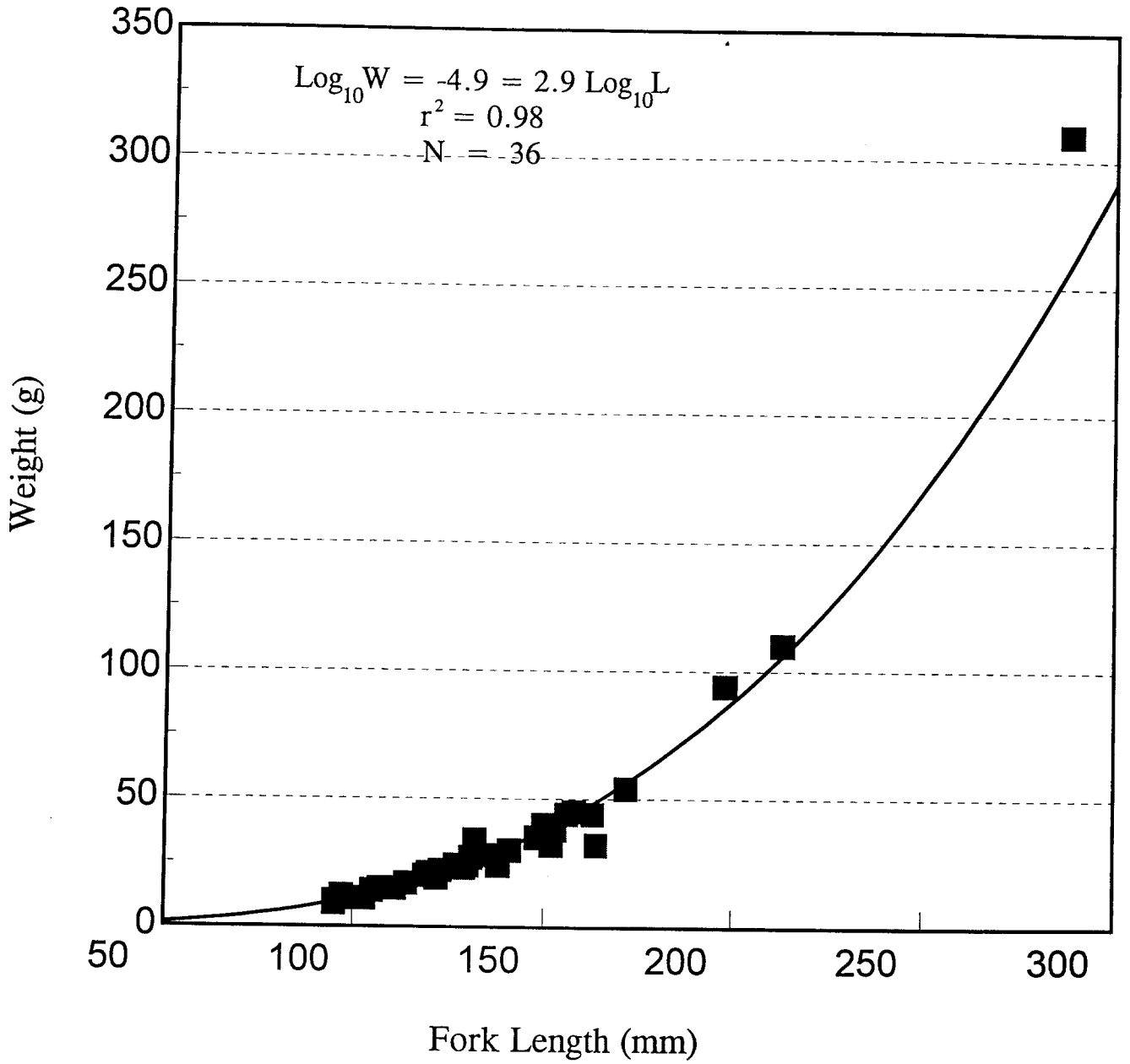

FIGURE 3. The relationship between length and weight of brown trout caught in sections of Little Last Chance Creek, Plumas County, 1993.

from 0 to 96 and biomass averaged between 0 and 13.9 g/m^2 (Table 2).

TABLE 2. Standing Crops and Biomass for Brown and Rainbow Trout in Little Last Chance Creek, 1976-1993.

	Brown Trout		Rainbow Trout	
Year	Populuation Estimate	Biomass (g/m^2)	Population Estimate	Biomass (g/m^2)
1976	1	1.2	8	13.9
1981	6	2.7	17	4.0
1986	10	3.7	96	3.8
1988	21	5.5	43	6.5
1991	<1	0.3	0	0
1992	3	0.1	1	0.5
1993	12	1.7	0	0

The trout we caught were planted by the DFG in spring and summer 1993. The DFG planted fingerling and catchable brown trout and rainbow trout (Ron DeCoto, Fishery Biologist, DFG, personal communication). We caught no trout other than planted trout in 1991, 1992, or 1993. Few planted trout survived.

So few fish were caught because the DFG treated Frenchman Reservoir, Little Last Chance Creek and parts of the Feather River with rotenone to kill northern pike (Esox lucius). The DFG killed northern pike in this watershed to prevent them from migrating downstream into the Sacramento River. The DFG feels that pike could become established in the Sacramento River and become significant predators on juvenile salmonids (Brown 1992).

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APPENDIX 1

PERMANENT FISH POPULATION STATIONS FOR
LITTLE LAST CHANCE CREEK, PLUMAS COUNTY
SEPTEMBER 1993

Station 1 (1-Mile Station) - Located 1.6 km below Frenchman Dam just downstream from the first bridge at elevation of 1659 m MSL in NW 1/4 of NE 1/4, Section 4, T23N, R16E. This station begins in a rapid beneath the bridge carrying Frenchman Lake Road, then enters a pool with a deeply undercut room-sized boulder on the right bank. The remainder of the station is a short rapid and a shallow pool/run. About 55 percent of the station is pool and 45 percent rapid. Substrate is boulder, rubble, and sand. The station is 46.5 m long with a surface area of 234.8 m^2 at a flow of 0.4 cms.

Station 3 (Campground Station) - Located 4.4 km below Frenchman Dam adjacent to the cutoff road in the center of Chilcoot Campground at an elevation of 1561 m MSL in NE 1/4 of NE 1/4, Section 10, T23N, R16E. This station begins in a steep rapid followed by a long pool with undercut right bank, then a short rapid, a short pool, and finally, another steep rapid. The station is 40 percent pool and 60 percent rapid. Substrate is boulders, rubble, and sand. The station is 60 m long with a surface area of 330 m^2 at a flow of 0.4 cms.

APPENDIX 2

LENGTH AND WEIGHT OF BROWN TROUT
CAUGHT IN LITTLE LAST CHANCE CREEK, 1993

Fork Length (mm)	Weight (g)
95	10
95	9
97	12
100	11
103	11
105	14
107	15
111	15
114	17
114	17
119	20
120	21
122	19
122	21
123	22
127	24
129	23
130	24
131	27
132	34
135	28
138	24
141	30
148	35
150	40
152	32
152	38
153	38
156	44
158	45
163	44
164	32
172	54
198	94
213	110
288	310

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